IN THE CLAIMS:

1-22 (canceled).

23 (original). A process for making functionalized polyalkyleneimines, comprising treating a polyalkyleneimine with a functionalized hemiacetal in the presence of titanium (IV) isopropoxide and sodium borohydride.

24 (original). The process according to claim 23, further comprising an alcoholic solvent.

25 (original). The process according to claim 24, wherein the alcoholic solvent is methanol or ethanol.

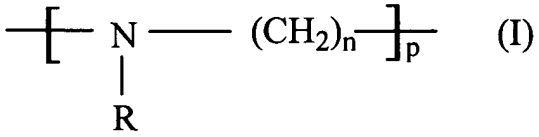
26 (original). The process according to claim 23, which is performed at a temperature between about 10°C and about 30°C.

27 (original). The process according to claim 23, wherein between about 25 mol and about 100 mol of titanium (IV) isopropoxide are used per mol of polyalkyleneimine.

28 (original). The process according to claim 23, wherein a molar amount of sodium borohydride is used equal to between 50% and 80% of the molar amount of titanium (IV) isopropoxide.

29 (original). The process according to claim 23, wherein between about 6 mol and about 100 mol of functionalized hemiacetal are used per mol of polyalkyleneimine.

30 (original). The process according to claim 23, wherein the polyalkyleneimine has the general formula:



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wherein R is hydrogen or a group of the general formula:

(II)

wherein n is an integer between 2 and 10 inclusive;

wherein p and q are integers; and

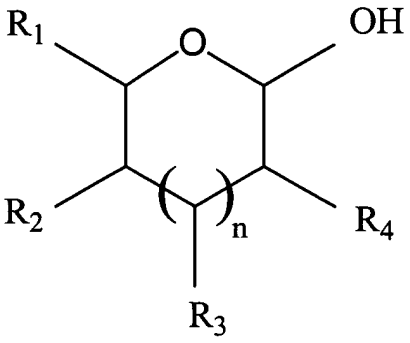
wherein the sum of p + q is such that an average polymer molecular weight is between about 100 Da and about 10^7 Da.

31 (original). The process according to claim 30, wherein the polyalkyleneimine is polyethyleneimine or polypropyleneimine.

32 (original). The process according to claim 31, wherein the polyethyleneimine has an average molecular weight of about 50,000 Da, about 25,000 Da, or about 22,000 Da.

33 (original). The process according to claim 31, wherein the polypropyleneimine has an average molecular weight of about 800,000 Da.

34 (currently amended). The process according to claim 23, wherein the functionalized hemiacetal has the general formula:



wherein n is 0 or 1;

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R_1, R_2, R_3, and R_4 are independently hydrogen, a group compatible with the process according to claim 23, or a targeting element that directs the transfer of a nucleic acid toward specific cell types, specific tissues, or specific cell compartments; and only one of R_1, R_2, R_3, and R_4 is a targeting element.

35 (original). The process according to claim 34, wherein the group which is compatible with the reaction is chosen from hydroxyls, C1-C4 alkyls, and C1-C4 hydroxyalkyls.

36 (original). The process according to claim 34, wherein the targeting element is chosen from sugars, peptides, proteins, oligonucleotides, lipids, neuromediators, hormones, vitamins, and derivatives thereof.

37 (original). The process according to claim 34, wherein the targeting element is chosen from growth factor receptor ligands, cellular lectin receptor ligands, cytokine receptor ligands, ligands of RGD sequences with an affinity for the receptors of adhesion proteins, transferrin receptors, high density lipoproteins, low density lipoproteins, the folate transporter, Sialyl Lewis X, antibody fragments, single-chain antibodies (ScFv), monoglycerides, diglycerides, and triglycerides.

38 (previously presented). The process according to claim 37, wherein between about 1% and about 20% of the functionalized hemiacetal is grafted onto the polyalkyleneimine.

39 (withdrawn). A composition comprising at least one polyalkyleneimine prepared according to the process of claim 23 and at least one nucleic acid.

40 (withdrawn). The composition according to claim 39, wherein the nucleic acid is a deoxyribonucleic acid or a ribonucleic acid.

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41 (withdrawn). The composition according to claim 40, wherein the nucleic acid comprises a gene of therapeutic interest under the control of regulatory sequences.

42 (withdrawn). A method for transferring nucleic acids into cells comprising preparing the composition according to claim 39 and contacting said cells with the composition under conditions which allow DNA transfer.

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